

REMARKS

BACKGROUND

Status of the Claims

Claims 1-12 were presented for examination. Claim 11 was rejected under 35 U.S.C. 101 as directed to neither a process or a machine. Claims 9, 11, and 12 were rejected under 35 U.S.C. 112 for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. Claims 1-8 and 10-11 were rejected under 35 U.S.C. 103(a) as unpatentable over U.S. Patent No. 6,008,892 to Kain ("Kain") in view of U.S. Patent Application S/N. 10/007,456 to Lacovara ("Lacovara") in further view of U.S. Patent No. 6,587,197 to Rahbar-Dehghan ("Rahbar-Dehghan"). Claim 3 was rejected under 35 U.S.C. 103(a) as unpatentable over Kain, Lacovara, and Rahbar-Dehghan in further view of U.S. Patent No. 6,721,471 to Mackinnon ("Mackinnon"). Applicant hereby cancels claims 9, 11, and 12. Applicant hereby amends claims 1, 2, 6, 7, 10. Support for the claim amendments can be found throughout the Specification and at least at paragraphs 0002-0005, 0007, 0040, 0064, and FIG. 2. Applicant hereby enters new claims 13-27. Support for the newly entered claims can be found throughout the Specification and at least at paragraphs 0002-0005, 0064, 0080 and FIG. 2. Applicant respectfully submits that no new matter is added. Upon entry of this Response, claims 1-8, 10, 13-27 will be presented for examination.

Overview of Examiner's Rejections

In the Office Action claims 9, 11, and 12 were rejected under 35 U.S.C. 112 for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. In particular, claims 9 and 12 were omnibus type claims referring to the drawings. Claim 11 additionally was directed to neither a process nor a machine, and rejected under 35 U.S.C. 101. Claims 1-8 and 10-11 were rejected under 35 U.S.C. 103(a) as unpatentable over Kain in view of Lacovara in further view of Rahbar-Dehghan. Within this claim group, Applicant's claims 1 and 10 were submitted as independent claims. In particular, the Examiner maintains that Kain discloses an invention in which the "illuminator simultaneously illuminates all, or a substantial portion of one of the microspots. (FIG. 2)"

Summary of the Cited Art

U.S. Patent 6,008,892 to Kain is directed to an engineered optical substrate which enhances detectability of fluorescence from a laser-irradiated sample. Optical interference layers are incorporated on the substrate to improve the detectability of the fluorescent signal emitted from a sample deposited on the substrate. FIGs. 1-2 of this disclosure, and related discussion describe a scanning laser illumination system. In particular, FIG. 2 shows light from a laser 57 focused through a lens 61 onto a sample 55. U.S. Patent Application 10/007,456 to Lacovara is directed to a method for detecting a fiducial marking on a material, such as carpeting or other patterned materials (§ 0002). In this disclosure phase-detection techniques are employed to detect low-level light signals which may indicate pattern distortions in the material (§ 0007) which is moving (§ 0039) past the detectors and illumination source. U.S. Patent 6,587,197 to Rahbar-Dehghan is directed to a multiple microchannel chip useful for biomolecule imaging. Rahbar-Dehghan discloses a chip having an array of microchannels extending into the chip's substrate at an oblique angle (FIG. 4 and col. 6, lines 6-34). U.S. Patent 6,721,471 to Mackinnon is directed to a fiber optic switching system having a target surface upon which is deposited at least one fluorescent material, where the target or collecting optics are moved to provide fluorescent radiation at different wavelengths (Col. 2, lines 8-47).

RESPONSE TO THE OFFICE ACTION

35 U.S.C. 101 Rejection: Claim 11

Applicant hereby cancels claim 11.

35 U.S.C. 112 Rejections: Claims 9, 11, 12

Applicant hereby cancels claims 9 and 12.

35 U.S.C. 103 Rejections: Independent Claims 1 and 10

Claims 1 and 10 were rejected under 35 U.S.C. 103(a) as unpatentable over Kain in view of Lacovara in further view of Rahbar-Dehghan. In particular, the Examiner maintains that Kain discloses an invention in which the "illuminator simultaneously illuminates all, or a substantial

portion of one of the microspots. (FIG. 2).” Applicant respectfully traverses the rejection to the extent it is maintained against the claims as amended.

Applicant’s claims are directed to illuminating simultaneously an entire microspot, or a substantial portion thereof. In particular a single entire spot on a microarray can be illuminated at a time and then detected at a time, *without* the need for scanning, imaging and imaging software. Applicant clarifies this aspect of the invention in an embodiment described in paragraph 0038 of the application, and distinguishes their invention from prior art such as that taught by Kain. (Also refer to paragraphs 0029-0030 for Applicant’s reference to prior art systems.) Applicant’s claims are *not* directed to scanning an illumination beam over the sample as Kain teaches (FIG. 1, items 43 and 45, and col. 4, lines 45-52.) Kain teaches that the imaging system used should be “capable of scanning at high speed over a large scan field with high resolution imaging and minimal optical aberrations.” (Col. 5, lines 27-30.) Kain shows in FIG. 2 a laser beam 59 focused through a lens 61 onto a portion of a fluorescent sample 55. Kain does not teach illumination of the entire sample 55 as the Examiner maintains. The teachings of Kain teach away from Applicant’s invention as claimed in claims 1 and 10, wherein Applicant’s claims are directed to simultaneous illumination of all or a substantial portion of a microspot.

Lacovara provides no teachings to cure the deficiencies of Kain with respect to Applicant’s claims 1 and 10. Additionally, Lacovara’s teaching are directed to a sample located on a cylindrically-shaped surface (FIG. 3, items 250 and 300), which teaches away from Applicant’s claims 1 and 10. Kain taken alone or in combination with Lacovara does not teach or suggest all the elements of Applicant’s claims 1 and 10.

Rahbar-Dehghan similarly provides no teachings to cure the deficiencies of Kain with respect to Applicant’s claims 1 and 10. Rahbar-Dehghan teaches of a confocal imaging system comprising scanning apparatus and focusing lens for laser illumination (col. 5, lines 37-49). Rahbar-Dehghan also teaches of a substrate surface filled with microchannels, i.e. a non-flat surface. This teaches away from Applicant’s claims 1 and 10 which recite, “the at least one microspot is deposited on a substantially flat surface” and the illuminator is arranged to “simultaneously illuminate all, or a substantial portion of the at least one microspot.” Kain and

Lacovara taken in combination with Rahbar-Dehghan do not teach all the elements of Applicant's claims 1 and 10.

In view of the reasons set forth above, Applicant respectfully requests reconsideration and withdrawal of the rejections of claims 1 and 10 under 35 U.S.C. 103.

35 U.S.C. 103 Rejections: Dependent Claims 2-8

Claims 2-8 stand rejected under 35 U.S.C. 103(a) as unpatentable over Kain in view of Lacovara in further view of Rahbar-Dehghan. Claim 3 stands rejected under 35 U.S.C. 103(a) as unpatentable over Kain in view of Lacovara in view of Rahbar-Dehghan in further view of Mackinnon. Applicant respectfully traverses the rejection to the extent it is maintained against the claims as amended.

Applicant submits that these dependent claims now depend properly from allowable base claims. The above reasons set forth in regards to independent claims 1 and 10 are restated with full force and effect for the respective dependent claim 2-8. Additionally, Mackinnon provides no teachings to cure the deficiencies of Kain with respect to Applicant's claims 1 and 10. Applicant submits that dependent claims 2-8 are now in condition for allowance, and respectfully requests reconsideration and withdrawal of the Examiner's rejections of these claims under 35 U.S.C. 103(a).

CONCLUSION

In view of the above, Applicant submits that all presently pending claims are in condition for allowance, and early indication thereof is respectfully requested. If the Examiner feels that a telephone call would expedite the prosecution of this case, the Examiner is invited to call the undersigned at (617) 248-4801.

Applicant believes that no fee is due with this Reply. However, if any fee is due, please charge our Deposit Account No. 03-1721.

Respectfully submitted,
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